FISH AND WILDLIFE

C-004604

that has the same effect. What is more likely is that conservation measures will act to stretch existing supplies to meet a greater future demand. This actually may create more fluctuation in reservoir levels and have an adverse impact on reservoir recreation in this region. For instance, assume that a full reservoir in spring is kept as high as possible through the summer and drawn down in fall. When more demand exists, this delayed drawdown may not be feasible resulting in lower reservoir levels earlier in the summer, during peak recreational times. It is doubtful, though, that this would cause significant adverse impacts.

17. Fisheries and Aquatic Resources

This document does not include specific descriptions of impacts anticipated to occur from any of the common program (except the ERPP). The following text is taken from the draft *Water Use Efficiency Input Report* and presents the many, potential significant, benefits that could accrue to fisheries and aquatic resources as a result of the water use efficiency common program.

Efficiency improvements can provide some direct benefits to fisheries and aquatic ecosystems. These include reduced diversion impacts, improved water quality (see the comments on the *Water Quality Impact Report* under #3 above), potential to modify diversion timing, and potential to modify flow releases from reservoirs. (Note: please see water quality benefits, they are very important.)

To the extent that the anticipated 1 million acre-feet of applied water reductions can actually reduce surface water diversions, there may be inherent reductions in entrainment and impingement impacts to fisheries and aquatic species. However, there is not a one-to-one correlation between applied water reductions and potential benefits. For instance, many agricultural diversions begin in mid-spring, peak in July and August, and are no longer necessary after September or October. This creates a general bell-shaped diversion pattern. Reductions in applied water would primarily be consistently spread throughout the diversion season. Entrainment impacts, however, may be most problematic during certain months or flow periods. Therefore, only a fraction of the 1 million acre-foot applied water reduction will result in entrainment reduction benefits. In general, however, any reduction in diversion will generate positive impacts to fisheries and aquatic species existing in the source stream, river, drain, or reservoir.

Efficiency improvements in some areas of the Central Valley may also allow for slight modifications in the timing of local diversions. These modifications may not be more than a delay of a few days or a week for a planned diversion such that maybe a pulse flow could be routed downstream to help fish species out-migrate. For instance, assume a small tributary with several minor (<2 cfs) diverters. The diverters collectively decide to allow a pulse flow to move downstream to help flush juvenile salmon to a larger river. Each diverter successively delays irrigation diversions until the pulse flow has passed their diversion location. This may cause a delay in irrigation of a few days or a week, but, if properly coordinated, could be possible. Such an action has successfully been implemented on Shasta River. Delays in diversions on larger rivers or of larger diversions become increasingly less possible because of more complex instream flow regimes. The potential to modify diversion timing would have to be analyzed on a case-by-case

basis, but has the potential to positively benefit fisheries and aquatic species and instream flows.

Though most efficiency improvements do not generate water for reallocation to other purposes, as explained previously, there is ample opportunity to reduce losses associated with applied water for purposes of multiple benefits (though maybe not always locally cost-effective). One benefit is increased instream flow. The increased instream cumulative flows can be timed for release so they provide additional instream fishery benefits within their original basin. Water may stay instream for longer periods or for longer stream reaches, generally having positive benefits. In addition, savings could be accumulated in source reservoirs so that fishery benefits can be maximized.

Adverse impacts to fisheries and aquatic species can also occur as a result of efficiency improvements. Primarily, such impacts would be limited to streams and drainage that support aquatic life as a result of surface runoff and other inefficiencies. The reduction of these losses would directly reduce the source water in such areas, and thus could adversely impact the aquatic life. Many small creeks and drains that support aquatic life during the entire year only have water present in the summer and fall months as a result of agricultural inefficiencies. Reduction of this water source may result in drains and creeks drying up in the summer months, adversely impacting existing aquatic species, not to mention the vegetation and wildlife that are also part of the ecosystem.

For urban areas, the benefits are similar to those described above for agriculture. Potential exists to modify diversion timing and to modify flow releases from reservoirs as a result of reduction in diversions resulting from conservation measures. However, this potential may be minimal in areas that would potentially use any real saving to meet future demand, such as southern California. In areas where applied water reductions can actually reduce surface water diversions, this potential does exist (e.g., Sacramento). There may also be inherent reductions in entrainment and impingement impacts to fisheries and aquatic species when diversions are reduced or the timing of diversions is modified. In general, it could be anticipated that any reduction in diversion or beneficial change in the timing of diversions will generate positive impacts to fisheries and aquatic species existing in the source stream, river, or reservoir.

- Water transfers also have the potential to have a beneficial impact on fisheries. Depending on the individual transfer agreement, the timing of the transfer can correspond with instream fishery needs. In addition, if the water being transferred was the result of land fallowing, there will be reduced diversion impacts.

18. Vegetation and Wildlife

- Section 2.4.1, p. 2-5, No Action Impacts - Current trends in agricultural crops mixes in the Delta and Sacramento River regions are resulting in more permanent crops, such as vineyards and orchards, and less "wildlife conducive" crops such as alfalfa, pasture, and to some extent rice. This will probably continue to occur, even under No Action and could have adverse impacts to vegetation and wildlife. Also, improved irrigation efficiency is occurring throughout the valley, though not the extent anticipated under CALFED

alternatives, and is resulting in loss of some incidental wetland and riparian habitat areas.

- Section 2.4.2, p. 2-11,12 - Water Use Efficiency - Though specific actions are not outlined in this common program, we can anticipate what impacts may occur as a result of increased local implementation of water use efficiency actions. The following text can be used to describe the potential impacts associated with implementation of the water use efficiency program (text is from the draft Water Use Efficiency Input Report):

  The interaction between efficiency improvements and vegetation and wildlife is a complex issue involving not only physical aspects but biological ones as well. Improved on-farm efficiency and the reduction of losses associated with applied water will significantly reduce the opportunity for indirect reuse by wildlife and habitat areas. There are numerous examples of seasonal wetlands, riparian corridors, and other habitats that have developed as a result of water losses leaving a field and traveling to another field or to a surface stream or drain. Collectively, these habitat areas have significant vegetative and wildlife value.

  Reduction or elimination of losses that are reused by these habitat areas could adversely impact their survival. It is possible to directly deliver conserved water to these same areas as mitigation. If so, direct water supplies may have better water quality but may lack necessary sediments and nutrients delivered from field runoff that were used by the habitats.

  Also, improved efficiency could result in changes in the types of crops grown in a region. For instance, a district may implement efficiency measures that result in a need to raise the price for water. For some growers, the higher price may force them to change crops to types that have more economic value, such as from rice to tomatoes. Though this impact may be limited by other factors, some areas of the Sacramento Valley are experiencing a shift in crop types as a result of increased water cost. To the extent that efficiency improvements further such shifts, there could be an adverse impact to waterfowl and other wildlife from the reduction in acreage of lands, such as rice fields, that are conducive to wildlife.

  Mitigation may reduce such adverse impacts, but analysis should be made on a case-by-case basis to see if it is prudent to eliminate an existing habitat areas created by inefficiencies simply to create or enhance another habitat, but at greater cost.

- Water transfers may also have an adverse impact on vegetation and wildlife if water made available is derived through land fallowing. In many instances, land fallowing would probably be temporary (1 to 3 years) so would not provide any wildlife habitat for that period of time. However, the amount of fallowing may be small compared with the current acreage in agricultural production. Therefore the impacts may be less than significant.

- Section 5, p. 5-34, 5-84 - Water Use Efficiency - Though specific actions are not included in the water use efficiency common program, we can still anticipate potential positive and

negative impacts to vegetation and wildlife. We should not state that potential impacts cannot be determined. The material provided above should be used to summarize potential impacts that could occur as a result of increased implementation of conservation measures, especially by Central Valley agriculture.

- p. 5-35, 5-71, 5-89, 5-111 - last paragraph - The water use efficiency program incorporates existing voluntary programs, but couples it with certification and assurance measures so that there are appropriate incentives to gain high levels of 'voluntary' participation. Currently, irrigation practices in the Delta result in many incidental wetland and marsh areas. These could be lost or severely degraded as a result of improved efficiency. Also, water use efficiency is envisioned to provide more benefits than just new water. In fact, in the Delta, most of the losses associated with irrigation return back to the channel, so conservation does not 'add' water to Delta channels. It may reduce the constituent loading associated with drainage pumped off Delta islands and may reduce aquatic species diversion impacts, but there is no change in the water available to channels. The following is proposed language that could be substituted for this paragraph:

  "The Water Use Efficiency Program will help reduce the mismatch between Bay-Delta water supplies and current and projected beneficial uses dependent on the Bay-Delta system. Local implementation of efficiency measures as a result of the program's policies will result in more effective water management, and in some cases provide new water for other beneficial uses. As such, there may be opportunities to affect tributary and Delta channel water levels and flows through modifications in diversion timing and amount. These changes can potentially have a beneficial impact on bank and channel vegetation and associated wildlife. However, in the agricultural sector, conservation measures may also result in reduced water available for incidental wetlands and riparian habitats dependent on historic inefficiencies."

  This or a similar paragraph should then be referenced by all other alternatives and regions as is now the case.

- Section 5, p. 5-14 - Impact 1.1, 1.2, 1.3, 1.4 - As stated in the above comments, efficiency improvements will result in less water available to incidental habitats that are dependent on existing inefficiencies. These can be wetlands at the end of a field or riparian vegetation in a drainage ditch or channel. In some instances, tailwater return systems will be built as an efficiency measure. Tailwater ponds included in the return systems can be designed to incorporate beneficial habitat areas. Generally, efficiency measures will result in both temporary (from land grading and construction activities) and permanent (from reduced losses flow to habitats both on-farm and in district level delivery canals) loss of wetland and riparian communities.

  Crop changes will also continue to occur in the future resulting in temporary (through land fallowing, possibly for transfers) and permanent (conversion of rice land and pasture to vineyards and orchards) loss of wintering waterfowl foraging habitat. These impacts have the potential of being significant, especially when considered along with other agricultural